



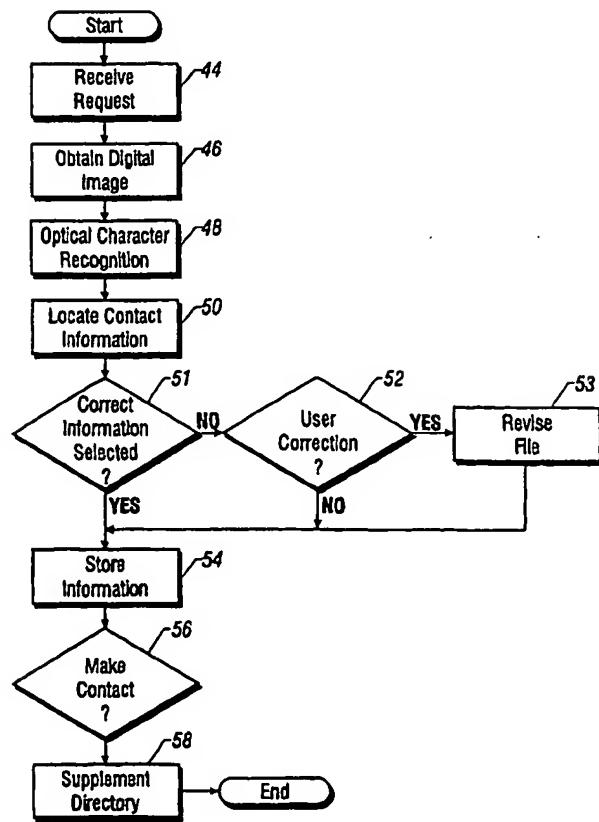
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> :  G06K 9/20	A1	(11) International Publication Number: <b>WO 00/05679</b>  (43) International Publication Date: <u>3 February 2000</u> (03.02.00)
<p>(21) International Application Number: <b>PCT/US99/13734</b></p> <p>(22) International Filing Date: <b>17 June 1999 (17.06.99)</b></p> <p>(30) Priority Data: 09/119,570                    20 July 1998 (20.07.98)                    US</p> <p>(71) Applicant: INTEL CORPORATION [US/US]; 2200 Mission College Boulevard, Santa Clara, CA 95052 (US).</p> <p>(72) Inventor: <u>DICHTER, Carl</u>; 161 North Forest, Chandler, AZ 85226 (US).</p> <p>(74) Agent: TROP, Timothy; Trop, Pruner, Hu &amp; Miles, P.C., Suite 100, 8554 Katy Freeway, Houston, TX 77024 (US).</p>		
<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report.</i></p>		

(54) Title: DISPLAY CAPTURE SYSTEM

## (57) Abstract

A computer system captures information from a television display digital signal. The digital signal is subjected to optical character recognition to allow the computer system to recognize characters displayed on that screen. The character information is then scanned for desired patterns associated with contact information. Once the contact information has been isolated, it may be stored or an immediate contact may be automatically implemented.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						



- 1 -

### Display Capture System

#### 5    Background

This invention relates generally to computers, and in particular embodiments to capturing information from television or computer displays.

Personal computers are now moving into the arena previously occupied by television receivers. The so-called set top personal computers interact with television receivers to provide advanced programming functions, digital television and other functions normally associated with personal computers, such as internet access and games. Thus, users of the set top personal computers may have at their disposal both a television capability and the capability normally associated with the personal computer. The set top personal computers use the television screen as the display both for the computer system and the television receiver.

Computers may also display television pictures on a computer display or monitor. A tuner card in the computer acts as a television receiver so that a television program may be viewed on a computer monitor.

Contact information is commonly displayed in television programming, particularly in television advertising. Many viewers have difficulty in recording contact information because, by the time they locate pencil and paper, the information is no longer displayed. Thus, advertisers may lose important opportunities and viewers may miss desirable information.

Similarly, some contact information may be displayed as a graphical image (ie. in graphics rather than text mode) on an Internet web page. This may be the case where elaborate fonts or graphical displays are desired, for example with trademarks.

It would be desirable to enhance the ability of a user of a computer system to retain non-textual information from a display.

#### 30    Summary

In accordance with one aspect, a method for obtaining information from an image signal using a computer includes obtaining a digital representation of a display image. Characters in the image are recognized and the desired content within the image is located.

Brief Description Of The Drawing

Figure 1 illustrates the display screen of a television showing an advertisement;  
Figure 2 is a file captured from information on the screen shown in Figure 1;  
5 Figure 3 is a file containing information captured from the screen shown in Figure 1;  
Figure 4 is a block diagram showing a computer system for implementing one  
embodiment of the present invention; and  
Figure 5 is a flow chart showing a flow for one embodiment of the present invention.

10 Detailed Description

Images containing contact information may be captured from a television picture or a computer display and manipulated by a computer system to facilitate contact with the broadcast content provider, which may be the advertiser on a television program. For example, television advertisers commonly broadcast advertisements like that shown in Figure 1 which display a variety of information about their products. These advertisements may also include contact information such as names, addresses, telephone numbers and universal resource locators (URLs) which may be utilized to contact the advertiser or other content provider.

A computer monitor display may also include images that include contact information in an image or graphics mode, for example using bit mapped graphics, rather than a text mode. The contact information may be included as part of an Internet web page, for example.

In accordance with one aspect, the signal information that produces the image on the television or computer display 10 is digitally captured. For example, the telephone number depicted on the display 10 shown in Figure 1 may be recorded and provided in the form of a digital file 12 as indicated in Figure 2. Similarly, additional information from the screen 10 may be captured and placed in an appropriate field 15 according to the type of contact information.

Software may use logical heuristics to determine which information constitutes a person's name, which information constitutes a company name, which information constitutes an address, which information is a phone number and which information constitutes an Internet URL. Common characteristics of each of those fields may be stored in

- 3 -

a program to determine whether or not a given piece of information belongs in a particular field.

Referring to Figure 4, a set top computer system 15 includes a processor 16 connected to system memory 18 and a north bridge 20. The north bridge 20 may conventionally connect to a bus 22 which may in turn be coupled to a display controller 24 which is in turn connected to a television 25. The bus 22 may also connect to a south bridge 26. The bridge 26 may couple a hard disk drive 28 which may contain one or more programs 30 and 31 which, in the illustrated embodiment could be an optical character recognition (OCR) and a telephone/address directory program.

The south bridge 26 in turn connects to a bus 32 which may connect to a serial input output (SIO) port 34. The port 34 may connect to a keyboard 36, a telephone dialer 40 and a modem 38. The basic input output system (BIOS) 42 may also be connected to the bus 32. Of course, other implementations are possible and various additional components and peripherals may be connected to a conventional set top computer system.

Referring now to Figure 5, the computer system 15 initially receives a request for capture services as indicated in block 44. This may be the result of the user clicking on a button on a display screen 24 or by activating a particular hot key on the keyboard 36. This request is interpreted as a request to capture information from the television display. The image displayed at the time of the request may be digitally captured as indicated in block 46 through the operation of the processor 16. The captured digital image is then subjected to an optical character recognition conversion, as indicated in block 48, using the optical character recognition software 30. This software scans the information in the digital image and identifies and associates the image shapes with known characters such as numbers and letters. It then provides a text mode representation of the image or graphics mode data.

The computer system uses heuristics to locate information which corresponds to contact information styles, as indicated in block 50. For example, numbers followed by letters may be recognized as addresses while pairs of words with capital letters may be recognized as names. Common first names may be stored in a database to help determine that a personal name is involved. Similarly, particular sequences of numbers may be recognized as telephone numbers and certain letter sequences may be recognized as URLs.

Once the contact information has been identified, it may be displayed to the user, for example, on the display screen, and the user may check the displayed information to insure

- 4 -

that the desired information was captured, as indicated in block 52. The user can insert corrections in a corrections window (block 52) and the contact information is revised (block 53). For example, if two telephone numbers are returned, the user can indicate which telephone number is desired.

5       The selected contact information may then be stored in memory 18 or on the hard disk drive 28, as indicated in block 54. In some cases, it may be desirable to then make contact, as indicated in block 56, using the contact information. The dialer 40 may be automatically activated to call the stored telephone number. Alternatively, where a URL has been identified, the modem 38 may be used to automatically contact an appropriate Internet service provider and to obtain the desired web page.

10      Contact information that has been captured off of the television display may then be automatically added to the database of conventional software 31 that compiles contact information, such as software telephone or address directories. Once the information has been identified and placed in the appropriate fields it can be supplied to such software 15 directories for later use, as indicated in block 58. These directories may provide searching and autodialing capabilities and the like.

15      The computer system 15 determines whether the telephone number is either a local number or a long distance number by comparing any area code with a predetermined local area code. If the call is a long distance call, a dialing prefix may be added.

20      The present system facilitates making contact with information providers who provide content such as advertising over television broadcasts or graphics mode information on web pages. It also facilitates storing such contact information in contact software such as address or telephone directory software.

25      While the present invention has been described with respect to a single embodiment, those skilled in the art will appreciate numerous modifications and variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of the present invention.

- 5 -

What is claimed is:

1        1. A method for obtaining contact information from an image signal using a  
2 computer, comprising:

3              obtaining a digital representation of a display image;  
4              recognizing characters in said image; and  
5              locating contact information in said characters.

1        2. The method of claim 1 including locating a telephone number in said  
2 characters and automatically dialing said telephone number.

1        3. The method of claim 1 including locating an Internet address in said characters  
2 and automatically contacting said Internet address.

1        4. The method of claim 1 including storing said contact information on the  
2 computer.

1        5. The method of claim 1 including providing the contact information to the user,  
2 allowing the user to alter the contact information and revising the contact information  
3 according to information from the user.

1        6. The method of claim 1 including recognizing a user command, and upon  
2 receipt of the user command obtaining a digital representation of the display image being  
3 displayed at the time the user command is received.

1        7. The method of claim 1 wherein said contact information includes a telephone  
2 number.

1        8. The method of claim 1 wherein said contact information includes an Internet  
2 address.

- 6 -

- 1        9.      The method of claim 1 including automatically adding said contact
- 2      information to a software address directory.
- 1        10.     The method of claim 1 wherein the obtaining step includes obtaining a digital
- 2      representation of a television display image.
- 1        11.     The method of claim 1 wherein the obtaining step includes obtaining a digital
- 2      representation of a computer display image in graphics mode.
- 1        12.     A computer system comprising:
  - 2          a processor;
  - 3          memory coupled to said processor;
  - 4          an input device coupled to said processor;
  - 5          a television receiver coupled to said processor to display television programs; and
  - 6          an optical character recognition device arranged to scan signal information for generating a
  - 7          television picture and to identify contact information in said signal information.
- 1        13.     The system of claim 12 including a telephone dialer coupled to said processor.
- 1        14.     The system of claim 12 including a modem coupled to said processor.
- 1        15.     An article comprising a computer readable medium storing instructions to
- 2      enable a computer to:
  - 3          obtain a digital representation of a display image;
  - 4          recognize characters in said image; and
  - 5          locate contact information in said characters.
- 1        16.     The article of claim 15 wherein said medium stores instructions to enable a
- 2      computer to recognize a user command and obtain a digital representation of a display image
- 3      being displayed at the time the user command is received.

- 7 -

1        17.     The article of claim 15 wherein said medium stores instructions to enable a  
2 computer to locate a telephone number and automatically dial said number.

1        18.     The article of claim 15 wherein said medium stores instructions to enable a  
2 computer to locate an Internet address and automatically contact said Internet address.

1        19.     The article of claim 15 wherein said medium stores instructions to enable a  
2 computer to store said contact information.

1        20.     The article of claim 15 wherein said medium stores instructions to enable a  
2 computer to provide the contact information to the user, allow the user to alter the contact  
3 information and revise the information according to information from the user.

1        21.     The article of claim 15 wherein said medium stores instructions to enable a  
2 computer to automatically add said contact information to a software address directory.

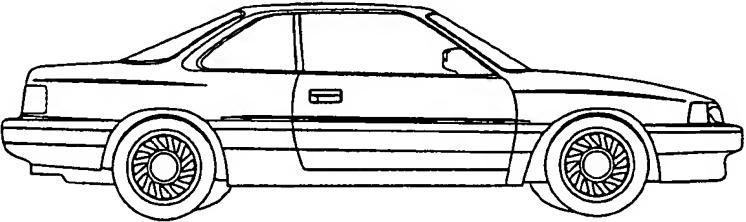
1        22.     The article of claim 15 wherein said medium stores instructions to enable a  
2 computer to obtain a digital representation of a television image.

1/3

10

www.acme.com

## YOUR CAR CONNECTION



Acme Sales Corporation  
1200 Chandler Blvd.  
Chandler, Arizona 85226  
602-664-7516  
Ask For Bill Evans

FIG. 1

12

602-664-7516

FIG. 2

14

15a ~

<b>Person:</b>	Bill Evans
<b>Company:</b>	Acme Sales Corporation
<b>Address:</b>	1200 Chandler Blvd.
	Chandler, Arizona 85226
<b>Phone:</b>	602-664-7516
<b>Internet:</b>	www.acme.com

FIG. 3

2/3

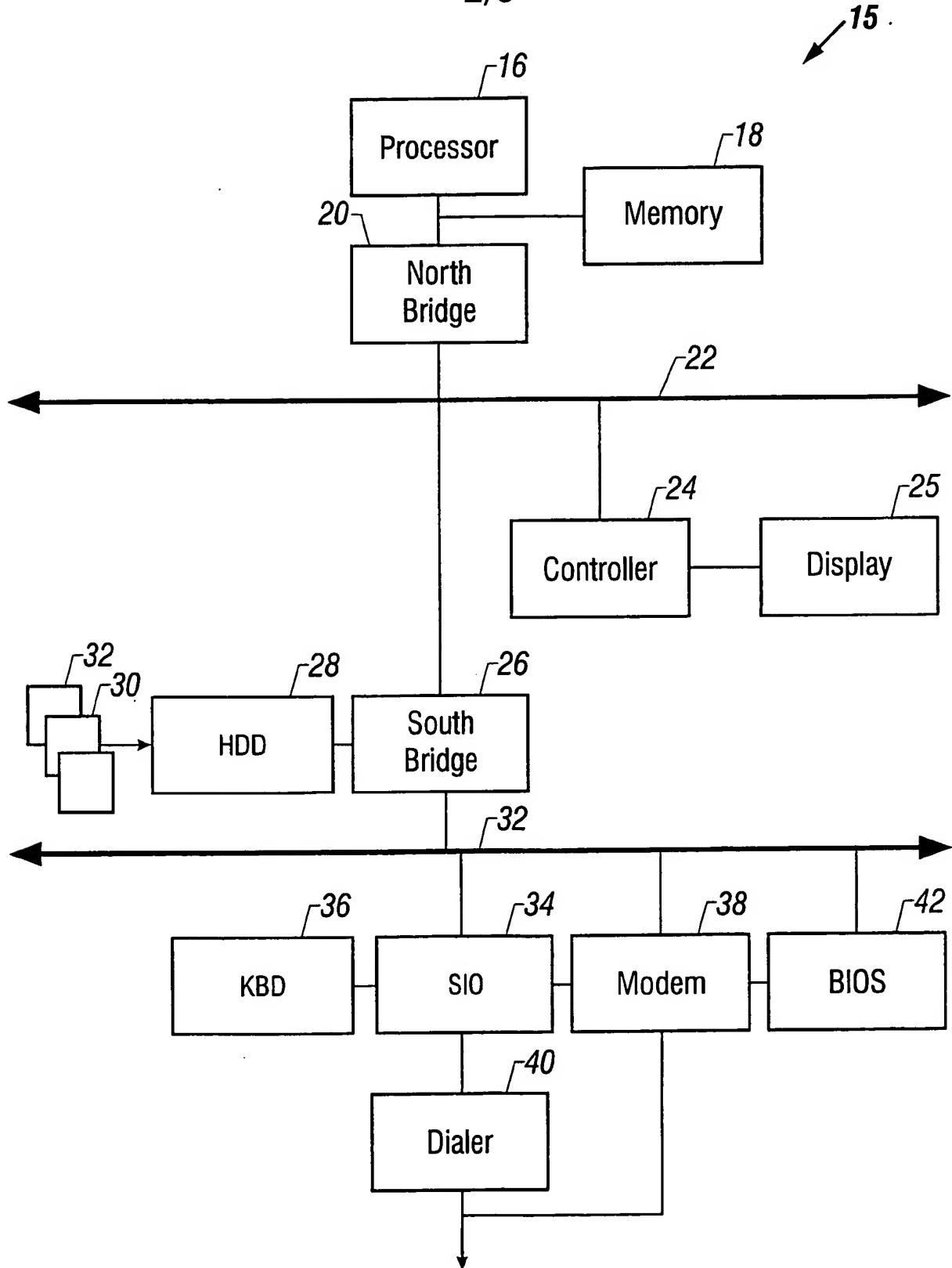


FIG. 4

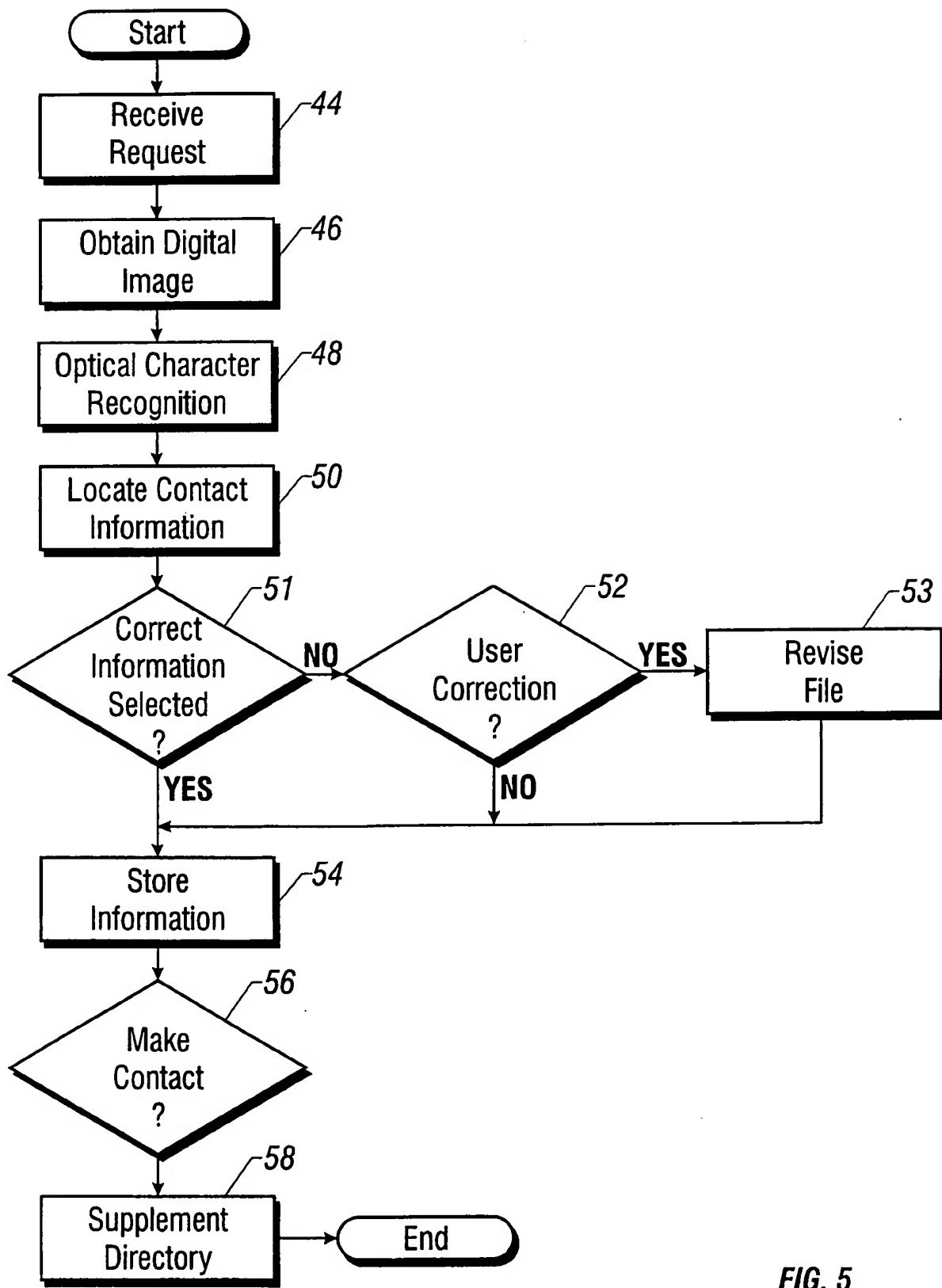


FIG. 5

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/13734

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 G06K9/20

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 720 114 A (SIEMENS CORPORATE RESEARCH) 3 July 1996 (1996-07-03) abstract; figures 1A-1H -----	1-22
Y	PANDIT M S ET AL: "THE SELECTION RECOGNITION AGENT: INSTANT ACCESS TO RELEVANT INFORMATION AND OPERATIONS" IUI '97. 1997 INTERNATIONAL CONFERENCE ON INTELLIGENT USER INTERFAC, ORLANDO, JAN. 6 - 9, 1997, 6 January 1997 (1997-01-06), pages 47-52, XP000731429 MOORE J; EDMONS E; PUERTA A (EDS ) ISBN: 0-89791-839-8 the whole document -----	1-22

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

13 October 1999

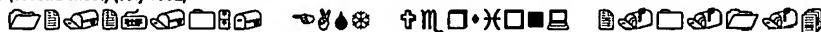
20/10/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Chateau, J-P



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/US 99/13734

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 720114	A 03-07-1996	NONE	

